Space Weather Forecast

Issued on Thursday, 19 September 2024 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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From the 24th of September, the way we distribute this forecast is changing and you will need to take action to continue receiving it. You should have received an email on the 4th of September explaining the steps required to do this. If you have already signed up to receive the forecast on our premium website, please disregard this message. If you haven't, or if you need help with the process, please contact moswoc@metoffice.gov.uk.

Space Weather Forecast Headline: CME influences waning. Ongoing Chance of Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with only Common-class x-ray flares observed.

Six sunspot regions currently on the visible disc. AR3825, in the center southern disk, remains the largest and most complex region, although no significant growth has been observed. This region remains perhaps the most noteworthy group due to its history of strong flare activity. AR3824, in the southwest, has seen both proliferation and fading of a number of spots in the intermediate and lead portions. As the region continues to rotate towards the western limb, the viewing angle will make assessment increasingly difficult. All other regions remain generally stable.

No Earth-directed Coronal Mass Ejections (CMEs) were observed on available coronagraph imagery during the period

Solar Wind / Geomagnetic Activity: Solar wind speed parameters have been highly variable, between 400-500km/s as CME influence waned. The interplanetary magnetic field, Bt, was at weak to moderate levels. The important north-south component, Bz, varied weakly. Geomagnetic activity was initially Active (Kp4). Since 18/0300 UTC, activity has been Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: Solar radiation was below the S1/Minor Solar Radiation Storm level, steadily falling close to background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of isolated Moderate-class flares. There is a slight chance of an isolated Strong-class flare.

Solar Wind / Geomagnetic Activity: CME influence from the arrival late on 16 Sep has now largely waned. No other CMEs feature in the current forecast.

Solar wind speeds have been highly variable, around 420-480km/s, having eased somewhat as CME influence waned. Faster solar wind influence may see solar winds remaining at slightly

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elevated to elevated levels into the period. In the absence of significant enhancement speeds are expected to return to slow ambient levels however.

Quiet to Unsettled (Kp 1-3) conditions expected for much of the period, however of isolated Active (Kp 4) intervals are likely and a slight chance of a G1/Minor Geomagnetic storm interval resulting from potential faster solar wind connection.

Energetic Unsettled or Active on Day 1 (18 Sep), with a slight chance of reaching G1/Minor Storm levels if the fast wind from CH70/+ occurs late on Day 1 or Day 2 (18-19 Sep). Quiet conditions are likely from Day 3 (20 Sep).

Energetic Particles / Solar Radiation: Solar radiation expected to remain at background. A slight chance of enhancement following any significant solar flaring persists through the period however.

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Met Office

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	15	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	40	40
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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